# NOTES ON THE COMPOSITAE OF THE NORTHEASTERN UNITED STATES

## VI. CICHORIEAE, EUPATORIEAE, AND ASTEREAE

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*Aster Priceae* Britton has been considered to differ from *Aster pilosus* Willd. in its pink-purple rather than white rays, slightly larger heads, and more restricted, southern distribution. The difference in head-size is not great enough to be depended upon, however, and there is some overlapping even outside the area where the two grow together. Furthermore, occasional otherwise apparently typical forms of *A. pilosus*, growing far outside the range of *A. Priceae*, have pink rays. In Athens, Georgia, I have seen both "species" growing together and apparently hybridizing freely, with many intermediate specimens forming a gradual transition from one extreme to the other. Since the general aspect of *A. Priceae* is similar to that of *A. pilosus*, since the technical differences are inconstant, and since there is field evidence of free hybridization, it seems necessary to reduce *A. Priceae* to intraspecific status.

ASTER PILOSUS Willd. var. **Priceae** (Britton) Cronquist, comb. nov. *A. Priceae* Britton, Man. 960. 1901. *A. kentuckiensis* Britton, loc. cit.

Several years ago Professor Fernald and Mr. Griscom presented a review of the *Eupatorium rotundifolium* group (RHODORA **37:** 179–181. 1935), in which the plants which had generally been treated as *E. rotundifolium* L., *E. pubescens* Muhl., *E. scabridum* Ell., and *E. verbenaefolium* Michx. were considered to represent four varieties of the single species *E. rotundifolium.* Ten years later (RHODORA **47:** 192–193. 1945) Fernald restored these to specific rank, adding a fifth species, *E. cordigerum* Fern. I feel that the earlier treatment is the more nearly correct. In proposing the name *E. rotundifolium* var. *lanceolatum* (Muhl.) Fern. & Griscom, its authors must have overlooked the earlier name *E. verbenaefolium* var. *Saundersii* Porter ex Britton, which applies to the same entity and thus has priority under Article 58 of the International Rules of Botanical Nomenclature. Porter's name was published as a trinomial without designation of rank,

but since it is well known that in 1901 Britton (the publishing author) recognized neither subspecies nor formae it is obvious that the name is of varietal status. A similar condition obtains with regard to trinomials proposed by many of the earlier botanists, who designated their varieties by Greek letters, without definitely stating their rank.

EUPATORIUM ROTUNDIFOLIUM L. var. **Saundersii** (Porter) Cronquist, comb. nov. *E. verbenaefolium Saundersii* Porter ex Britt. Man. Fl. N. States and Can. 923. 1901. *E. lanceolatum* Muhl. ex Willd. Sp. Pl. **3:** 1752. 1804. *E. rotundifolium* var. *lanceolatum* Fern. & Grisc. RHODORA **37:** 181. 1935. *E. verbenaefolium* Am. auth., perhaps not Michx.

It is also clear that Porter intended his name to be of varietal status, since the original label, in his own hand, bears the notation "Eupatorium verbenaefolium Saundersii, var. nov."

*Prenanthes racemosa* was described by Michaux as having 8–9 involucral bracts and 9–12 flowers in a head. Plants from New Jersey to Quebec, west to Minnesota and Iowa, agree with Michaux's character, although a more ample series of specimens shows that the range of normal variation in number of involucral bracts and flowers is 7–10 (most commonly 8) and 9–16 (most commonly 13), respectively. It will be noted that the numbers most commonly found are both in the Fabinacci series.

More northern and western plants, ranging from Alberta to Colorado, east to Iowa, Minnesota, and thence less commonly to Quebec and northern Maine, have more numerous flowers and involucral bracts. Here again the Fabinacci series is evident, for the principal involucral bracts are 10–14 (most commonly 13), and the flowers are 17–26 in a head (the number centering about 21).

No other correlated morphological differences between these two groups are readily evident, and in the area where both occur they are likely to be collected and distributed under a single number. Plantae Exsiccatae Grayanae 153, for example, from Aroostook River, Maine, includes plants of both types. Although the number of flowers and involucral bracts in a head has long been known to be important in *Prenanthes* (as, indeed, it is quite generally through the family), the differences here seem clearly to be intraspecific. In view of the fundamental morpho-

logical nature of the differences, combined with the well marked segregation in range, I think it proper to consider the two units as subspecies.

PRENANTHES RACEMOSA Michx. subsp. **racemosa** Cronquist, nom. nov. *Prenanthes racemosa* Michx. Fl. Bor. Am. **2:** 83. 1803, sens. strict.

PRENANTHES RACEMOSA Michx. subsp. **multiflora** Cronquist, subsp. nov. A subsp. racemosa differt involucri bracteis 10–14 (saepius 13), floribus 17–26.

TYPE: *Macoun & Herriot 43020*, Beaver Hill Lake, Alberta, August 23, 1906. Representative specimens: WYOMING: *Nelson 8923*. COLORADO: *Clements 368*. MONTANA: *Chickering s. n.* in 1874. SASKATCHEWAN: *Bourgeau s. n.* in 1857–8. MANITOBA: *Macoun 22799*. SOUTH DAKOTA: *Rydberg 842*. MINNESOTA: *Holzinger s. n.* at Winona in 1905. IOWA: *Hayden, Strunk & Tolstead s. n.* in 1933. ILLINOIS: *Mead s. n.* in 1846. MICHIGAN: *Williamson 2267*, from Isle Royale. QUEBEC: *Victorin 15311*.

The great intraspecific variation in the form and degree of cutting of the leaves of the *Cichorieae* in general and *Lactuca* in particular is well known. *Lactuca Serriola* L., *L. canadensis* L., *L. pulchella* (Pursh) DC., and *L. spicata* (Lam.) Hitchc., for example, are among the species now generally conceded to include forms with pinnatifid leaves and forms with the leaves entire or merely toothed. The varying forms of *L. canadensis* appear in the current manuals as distinct species, but were subsequently reduced to varietal status by Wiegand (RHODORA **22:** 9–11. 1920), whose taxonomic conclusions have been adopted by Fernald (RHODORA **40:** 480, 481. 1938) and others.

Contrariwise, it has become customary to distinguish as separate species *L. floridana* (L.) Gaertn., with pinnatifid leaves, and *L. villosa* Jacq., with merely toothed leaves. To bolster this distinction, it has been alleged that the achene of *L. floridana* has a short stout beak, while that of *L. villosa* is beakless. The fact is, however, that the achenes vary from merely tapering and beakless to distinctly short-beaked, with all intermediate conditions and without any evident correlation with leaf-outline.

Torrey and Gray were well aware of this variation in the achene. They described *L. floridana* (under the name *Mulgedium floridanum*) as having the "achaenia with a short beak", while its un-named var. γ differed only in having its "achaenia very obscurely rostrate". *L. villosa* (under the name *Mulgedium*

*acuminatum*) was said by them to have the "achaenia slightly rostrate". Their further note under *Mulgedium acuminatum*, "Heads small, nearly as the following species; from which the undivided leaves chiefly distinguish it", is quite in accord with my own observations.

More recently, Deam has made the following comment under *L. floridana* in his Flora of Indiana; "Our manuals describe it as having a short, narrow beak. All of my specimens are beakless, at least none with a beak longer than 0.3 mm."

I conclude that the variation from beakless to shortly stout-beaked achenes is without taxonomic significance in this instance.

The use of the epithet *villosa* for the plant with merely toothed leaves might suggest that it is more hairy than *L. floridana*, but the suggestion is not borne out by the specimens. It is worthy of note that when Asa Gray transferred *Sonchus acuminatus* Willd. (1803) to *Lactuca* (Syn. Fl. **1**[2]**:** 443. 1884), he listed the earlier *L. villosa* Jacq. as a synonym, with the note, "but the plant mostly glabrous or nearly so."

The remaining distinction between *Lactuca floridana* and *L. villosa*, that of the leaves, has been conceded to be not entirely constant, as will be noted by reading the descriptions in the current edition of either Gray's Manual or Britton and Brown's Illustrated Flora. My observations of the leaves are in general agreement with those descriptions. It is possible to refer most of the specimens to one entity or the other by the nature of the leaves, but intermediate specimens exist, and the plants look very much alike in other respects. The range of *L. villosa* is included within that of *L. floridana*, but is apparently less extensive.

The foregoing considerations necessitate the reduction of *Lactuca villosa* to varietal status under *L. floridana*, thus bringing the treatment of these two entities into conformity with that generally used elsewhere in the genus.

LACTUCA FLORIDANA (L.) Gaertn. var. **floridana,** nom. nov. *L. floridana* (L.) Gaertn. Fruct. **2:** 362. 1791, sens strict. *Sonchus floridanus* L. Sp. Pl. 794. 1753.

LACTUCA FLORIDANA (L.) Gaertn. var. **villosa** (Jacq.) Cronquist, comb. nov. *L. villosa* Jacq. Hort. Schoen. **3:** 62, pl. 367. 1798.

*Agoseris gracilens* (Gray) Kuntze was originally described by Asa Gray (under the name *Troximon gracilens*) as differing from

*A. aurantiaca* (Hook.) Greene in its narrower leaves and involucral bracts, longer and more slender beak of the achene, and slightly softer pappus. He further noted that *A. gracilens* "resembles slender forms" of *A. aurantiaca*. With the exception of the intangible feature of the pappus, these differences have been largely copied into the current manuals. Unfortunately, there is very little if any correlation between these characters, and the segregation of specimens based on any one of them does not approximate that based on any of the others. Furthermore, the variation in each of them is continuous, with no clear indication of a bimodal curve. Nor have I been able to detect any correlation in range. The variation in size and shape of the leaves is unusual (5–35 cm. long, 1–30 mm. wide, 6–100 or more times as long as wide, rounded to acuminate at the apex), but there are many parallel cases in the tribe, as a survey of some of the species of *Lactuca*, *Sonchus*, *Prenanthes*, or *Taraxacum* will show. I am therefore constrained to reduce *A. gracilens* to *A. aurantiaca*.

Falling, of necessity, with *A. gracilens*, is *A. gaspensis* Fernald. Fernald indicated in his discussion with the original description that the minute technical differences on which he segregated *A. gaspensis* were based on a comparison of the Gaspé plants with the type material of *A. gracilens*. Unfortunately, however, the range of variation of the cordilleran *population* (as distinguished from the type material) encompasses that of the plants from Quebec.

*Agoseris aurantiaca*, proper, as here defined, ranges from Alta. and B. C. to Calif., northern New Mexico, and probably northern Arizona, and the species is conceded a similar range in the current manuals. Toward the southwestern part of this range, chiefly in Arizona, New Mexico, Utah, and Colorado, but trailing off into Wyoming and southern Montana, occurs a usually recognizable variant which was named *Troximon aurantiacum* var. *purpureum* by Gray. As in *Agoseris aurantiaca* proper, the beak of the achene in this entity varies from barely more than half as long as the body to distinctly longer than the body, and there is a parallel variation in leaf-shape from very narrow and sharply pointed to relatively broad with rounded tip. The proper nomenclatural combination for this southern plant remains to be made.

AGOSERIS AURANTIACA var. **aurantiaca,** var. nov. *Troximon aurantiacum* Hook. Fl. Bor. Am. **1:** 300. pl. 104. 1834. *Agoseris aurantiaca* Greene, Pitt. **2:** 177. 1891. Involucral bracts from not at all purplish to purplish along the midrib and sometimes also finely dotted, rarely conspicuously mottled or blotched, the inner sharply pointed, the outer similar or a little broader and blunter, equaling or a little shorter than the inner. Alberta and British Columbia to California, Utah, northern New Mexico, and probably northern Arizona.

AGOSERIS AURANTIACA var. **purpurea** (Gray) Cronquist, comb. nov. *Troximon aurantiacum* var. *purpureum* Gray, Syn. Fl. **1**$^2$**:** 438. 1884. *Agoseris purpurea* Greene, Pitt. **2:** 177. 1891. Involucral bracts mottled or blotched with purple, conspicuously imbricate, broad, the outer and often also the inner blunt. Arizona, New Mexico, Colorado, Utah, Wyoming, and southern Montana.

When Asa Gray described *Microseris troximoides* in 1874 he named it for its resemblance to *Agoseris* (*Troximon*) *cuspidata* (Pursh) Steud., and noted that "This and *Troximon cuspidatum* indicate a clear transition between the two widely separated genera." The resemblance between the two species, extending to the general appearance, heavy root, crisped, villous-ciliolate leaf-margins, and thin, long-acuminate involucral bracts, is indeed so great that I cannot escape feeling that they are closely related. The only reliable feature to separate them is the pappus, which consists of 10–25 slender, gradually attenuate paleae in *M. troximoides*, and about 40–80 mixed capillary bristles and even more slenderly attenuate paleae in *Agoseris cuspidata*.

With the keen sense of relationships that his extreme splitting of genera and species has led many of us to forget, Edward Lee Greene united the two species concerned, with another which he described (probably a synonym of *M. troximoides*), into a new genus *Nothocalais* (Bull. Cal. Acad. **2:** 54, 55. 1886). *Nothocalais* was merely one of the several groups which Greene's liberal generic views led him to segregate from *Microseris*. Later, Henderson described another valid species, *Microseris nigrescens*, as being "Certainly closely related to *M. troximoides*," but differing among other things "in the very fine pappus, not half so wide as in that species," and being therefore "A nearer approach still to *Troximon*" (Bull. Torrey Club **27:** 348, 349. 1900).

The affinity between these three species, *Microseris troxi-*

*moides*, *M. nigrescens*, and *Agoseris cuspidata*, is so plain and so great that any treatment which leaves them in separate genera is unnatural. *Microseris troximoides* and *M. cuspidata* fit well into that genus, if it is defined in the broad sense of Asa Gray rather than in the narrower sense of Greene and Rydberg. *Agoseris cuspidata*, on the other hand, is intermediate between *Agoseris* and *Microseris* in its pappus, and is further anomalous in *Agoseris* because of its beakless achenes. Its nearest relative in *Agoseris* would appear to be the short-beaked *A. glauca* (Nutt.) D. Dietr., but the affinity does not seem particularly great. The achenes of *Microseris* are regularly beakless. It may also be noted at this point that *Microseris Forsteri* Hook., the only species of the genus found in Australia and New Zealand, has the pappus-bristles only slightly dilated at the base, scarcely more so than in *Agoseris cuspidata*.

It seems plain that on both morphologic and phyletic grounds *Agoseris cuspidata* should be transferred to *Microseris*. The proper combination was made many years ago by Schultz Bipontinus (Pollichia **22–24:** 309. 1866). The plant Schultz had in mind was actually *Microseris troximoides*, which was not "discovered" and formally named until 1874, but, nomenclaturally, *M. cuspidata* was strictly a transfer of *Troximon cuspidatum*.

There remains only one species of *Agoseris* with beakless achenes. This is *A. alpestris* (Gray) Greene, which Greene transferred without comment, along with a number of others, when he displaced *Troximon* with *Agoseris*. Its pappus is of capillary bristles, although these are seen to be compressed near the base. Its affinity with *Microseris* § *Nothocalais* is not so plain as that of "*Agoseris*" *cuspidata*, but some specimens show the peculiarly villous-ciliolate leaf-margins, and many of the specimens have one or two reduced cauline leaves well separated from the basal cluster. This latter character is wholly consonant with *Microseris*, but quite foreign to *Agoseris*. The involucre would not be out of place in *Agoseris*, but is distinctly suggestive of *Nothocalais*.

I would be inclined to transfer *Agoseris alpestris* to *Microseris*, thus leaving the development of a beak on the achene of *Agoseris* as a handy technical character to distinguish that genus from *Microseris*, were it not that Dr. Stebbins informs me that in California *A. alpestris* enters into a polyploid-apomictic complex

with *Agoseris glauca*. Here, as elsewhere in the *Compositae*, the genera are not sharply distinct, and species which on their morphology alone are not clearly referable to one or another of a pair of allied genera, must be placed according to their apparent relationship.

*Microseris* and *Agoseris* may now be redefined as follows:

AGOSERIS: Scapose, or sometimes very shortly caulescent in the annual species, the scape strictly naked above the cluster of leaves at the base (or with one or two reduced upper leaves in *A. alpestris*); involucral bracts subequal or imbricate; achenes evidently beaked at maturity, the beak short and stout or long and slender (beakless in *A. alpestris*); pappus of numerous capillary bristles.

MICROSERIS: Scapose or more or less leafy-stemmed; involucral bracts subequal, imbricate, or calyculate; achenes columnar to fusiform, but scarcely beaked; pappus of 5– many members, these with paleaceous base and slender, bristle-like, naked or plumose tip (intermingled with capillary bristles in *M. cuspidata*).

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A. PROSTRATE RORIPPA.—

RORIPPA ISLANDICA (Oeder) Borbas, var. MICROCARPA (Regel) Fernald, forma **reptabunda,** forma nov., caulibus elongatis repentibus 2–12 dm. longis; foliis plerumque simplicibus. Coös County, NEW HAMPSHIRE: muddy shore of Nash Stream Bog, Odell, 27 August, 1947, *A. S. Pease*, no. 33,162 (TYPE in Herb. Gray.; ISOTYPE in Herb. New Engl. Bot. Cl.); exsiccated shore of First Lake, Pittsburg, 3 September, 1947, *Pease*, no. 33,186.

This striking form, with very long, prostrate 1-sided stems rooting at the nodes and up to 1.2 m. long, its very numerous axillary fascicles with mostly simple leaves, abounds, Dr. Pease tells me, on the exsiccated margins of the two ponds. It is, perhaps, an ecological form, the stems starting growth in shallow water and on drying-out of the ponds, unable to maintain the usual upright habit. On the other hand, plenty of colonies of the species keep the ascending habit under similar conditions.—M. L. FERNALD.